

ProLiant DL360 Generation 2 Server

Maintenance and Service Guide

Part Number 233831-001

January 2002 (First Edition)

COMPAQ

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About This Guide

This Maintenance and Service Guide is intended to be used for reference when servicing Compaq ProLiant DL360 Generation 2 Servers.



WARNING: To reduce the risk of personal injury from electric shock and hazardous energy levels, only authorized service technicians should attempt to repair this equipment. Improper repairs can create conditions that are hazardous.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.



WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.



CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sideights, or interesting points of information.

⚠ Important Safety Information

Before installing this product, read the *Important Safety Information* document provided.

Compaq Technician Notes



WARNING: Only authorized technicians trained by Compaq should attempt to repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module-level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard.



WARNING: To reduce the risk of personal injury from electric shock and hazardous energy levels, do not exceed the level of repairs specified in these procedures. Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create conditions that are hazardous.



WARNING: To reduce the risk of electric shock or damage to the equipment:

- Disconnect power from the system by unplugging all power cords from the power supplies.
- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.



CAUTION: To properly ventilate the system, you must provide at least 7.6 cm (3.0 in.) of clearance at the front and back of the server.



CAUTION: The computer is designed to be electrically grounded (earthed). To ensure proper operation, plug the AC power cord into a properly grounded AC outlet only.

NOTE: Any indications of component replacement or printed wiring board modifications may void any warranty.

Where to Go for Additional Help

In addition to this guide, the following information sources are available:

- User documentation
- *Compaq Service Quick Reference Guide*
- Service training guides
- Compaq service advisories and bulletins
- Compaq *QuickFind*[™] information services
- Compaq Insight Manager software

For additional copies, visit the Compaq website:

www.compaq.com

Integrated Management Log

The server includes an integrated, nonvolatile management log that contains fault and management information. The contents of the Integrated Management Log (IML) can be viewed with Compaq Insight Manager.

Telephone Numbers

For the name of your nearest Compaq authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.

For Compaq technical support:

- In the United States and Canada, call 1-800-OK COMPAQ.
- For Compaq technical support phone numbers outside the United States and Canada, visit the Compaq website:

www.compaq.com

Illustrated Parts Catalog

This chapter provides the illustrated parts breakdown and spare parts list for the Compaq ProLiant™ DL360 Generation 2 server. See Table 1-1 for the names and part numbers of the referenced spare parts.

Mechanical Parts Exploded View

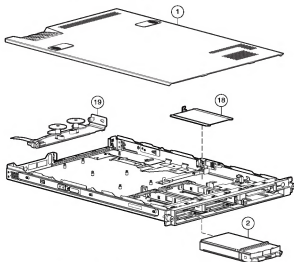


Figure 1-1: Mechanical parts exploded view

System Components Exploded View

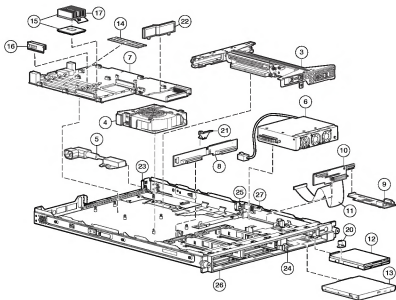


Figure 1-2: System components exploded view

System and Mechanical Spare Parts List

Table 1-1: System and Mechanical Spare Parts List

Item	Description	Spare Part Number
Mechanical Components		
1	Access Panel	252370-001
2	Hard Drive Blank	122759-001
3	PCI Riser Board Assembly	252356-001

continued

Table 1-1: System and Mechanical Spare Parts List *continued*

Item	Description	Spare Part Number
System Components		
4	Fan Assembly	252360-001
5	Filter, AC Power	252362-001
6	Power Supply	252361-001
Boards		
7	System board (without processor, with two heatsinks -Not shown)	252355-001
8	SCSI backplane	173829-001
9	User Interface board	252358-001
10	CD-ROM drive and floppy diskette drive backplane	252357-001
Cable		
11	CD-ROM/diskette backplane to system board cable	252364-001
Mass Storage Devices		
12	Low-profile 1.44MB diskette drive	252363-001
13	Low-profile IDE CD-ROM drive	228508-001
Memory		
14	128-MB registered 133-MHz SDRAM DIMM	156226-001
14	256-MB registered 133-MHz SDRAM DIMM	156377-001
14	512-MB registered 133-MHz SDRAM DIMM	156227-001
14	1-GB registered 133-MHz SDRAM DIMM	163902-001
Processors, PPM, and Heatsink		
15	1.40 GHz Intel Pentium III processor with heatsink	252353-001
16	Processor power module (PPM)	237553-001
17	Heatsink	252354-001
Miscellaneous		
	Replacement System Board Battery 3-V lithium (Not shown)	234556-001
	Country Kit (Not Shown)	252371-001
	Hardware Kit	252369-001
18	Cable protector	
19	Fixed cable tray	
20	Floppy retaining bracket with thumbscrew	
21	SCSI backplane retaining clip with thumbscrew	

continued

Table 1-1: System and Mechanical Spare Parts List *continued*

Item	Description	Spare Part Number
	Plastic Kit	252368-001
22	Air baffle	
23	AC power connector cable retaining clip	
24	CD ejection mechanism	
25	Expansion board clip	
26	Front Bezel	
27	Power supply retaining clip	
	Return Kit	173842-001
	Option Kits (Not Shown)	
	Sliding Rails and Cable Management Solution	252366-001
	Fixed Rail Kit	252365-001
	Telco rack mounting kit	252367-001
	AC "Y" power cord	178129-001
	Power Supply, 200 W, -48V	254525-001
	Low-profile DVD drive	269044-001

Removal and Replacement Procedures

This chapter provides subassembly/module-level removal and replacement procedures for Compaq ProLiant DL360 Generation 2 servers. No tools are required to service the server.

After completing all necessary removal and replacement procedures, it is recommended that server diagnostic programs be run to verify that all components are operating correctly.

The following Diagnostic programs, from the *SmartStart*™ and Support Software CD, may be used:

- Compaq System Configuration Utility
- Compaq Array Diagnostic Utility (ADU)

In addition the Compaq Server Diagnostics program may be run. This program is available from the Compaq website at

www.compaq.com/support/files/server/us

Electrostatic Discharge Information

A discharge of static electricity can damage static-sensitive devices or micro circuitry. Proper packaging and grounding techniques are necessary precautions to prevent damage. To prevent electrostatic damage, observe the following precautions:

- Transport products in static-safe containers such as conductive tubes, bags, or boxes.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Cover workstations with approved static-dissipating material. Use a wrist strap connected to the work surface and properly grounded tools and equipment.
- Keep the work area free of nonconductive materials such as ordinary plastic assembly aids and foam packing.
- Always be properly grounded when touching a static-sensitive component or assembly.
- Avoid touching pins, leads, or circuitry.
- Always place drives PCB assembly-side down.
- Use conductive field service tools.

Symbols on Equipment



25 kg
55 lb

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.



Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.



To reduce the risk of injury from electric shock hazards, do not open this enclosure.

WARNING: Any surface or area of the equipment marked with these symbols indicates the presence of electric shock hazards. The enclosed area contains no operator serviceable parts.



Any RJ-45 receptacle marked with these symbols indicates a Network Interface Connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



This label or equivalent is located on the surface of your CD-ROM drive. This label indicates that the product is classified as a Class 1 Laser Product.

Rack Warnings and Precautions



WARNING: To reduce the risk of personal injury or damage to equipment, always ensure that the rack is adequately stabilized before extending a component outside the rack. A rack may become unstable if more than one component is extended for any reason. Extend only one component at a time.



WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizers are attached to the rack if it is a single rack installation.
- The racks are coupled together in multiple rack installations.



WARNING: When installing the server in a Telco rack, make certain that the rack frame is adequately secured to the building structure at the top and bottom.



WARNING: To reduce the risk of personal injury or damage to the equipment, at least two people are needed to safely unload the rack from the pallet. An empty 42U rack weighs 253 lb (115 kg), is over 7 ft (2.1 m) tall, and may become unstable when being moved on its casters. Do not stand in front of the rack as it rolls down the ramp from the pallet, but handle the rack from both sides.

Server Warnings and Precautions



WARNING: To reduce the risk of personal injury from hot surfaces, allow the hot-plug drives and the internal system components to cool before touching.



WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from each power supply to disconnect power to the equipment.



CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.



CAUTION: The Compaq server must always be operated with the system access panel closed. Proper cooling will not be achieved if the system access panel is removed.

Preparation Procedures

Before removing any serviceable parts, determine whether the part is a hot-plug device or a non-hot-plug device.

Hot-Plug Devices

The only hot-plug devices on Compaq ProLiant DL360 Generation 2 servers are the SCSI hard drives. SCSI hard drives can be serviced without removing the server from the rack.

IMPORTANT: It is not necessary to turn off the server to replace hot-plug hard drives when they are not in active use.

Non-Hot-Plug Devices

The CD-ROM drive can be replaced with the server power in standby mode. The CD-ROM drive can be replaced without the need to remove the server from the rack.

To service all other non-hot plug devices, the server must be powered down completely by removing the power cord. To service all other non-hot-plug devices the server must be removed from the rack and the access panel removed after completely powering down the server.

Powering Down the Server

System power in servers does not completely shut off with the front panel Power On/Standby switch. The switch toggles between on and standby modes, rather than on and off. The standby position removes power from most electronics and the drives, but portions of the power supply and some internal circuitry remain active. To completely remove all power from the system, disconnect all power cords from the server.



WARNING: To reduce the risk of injury from electric shock, remove the power cord to completely disconnect power from the system.



WARNING: To reduce the risk of personal injury or damage to the equipment, ensure that only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.



WARNING: Because the rack allows you to stack computer components in a vertical rather than a horizontal plane, you must take precautions to provide for rack stability and safety to protect both personnel and property. Heed all cautions and warnings throughout the installation instructions that came with the server.



WARNING: To reduce the risk of personal injury or damage to the equipment: If the server is removed from the rack for device accessibility, remove the server from the rack and place it on a sturdy table or workbench. Refer to the *Compaq Setup and Installation Guide* for further information on working with racks.



CAUTION: The system power in the server does not completely shut off from the front Power On/Standby switch. Moving the switch from on to standby leaves some portions of the power supply and some internal circuitry active. Disconnect all power cords from the server to remove all power from the system.



CAUTION: Electrostatic discharge may damage electronic components. Be sure you are properly grounded before beginning any installation procedure. For more information, see "Electrostatic Discharge Information" earlier in this chapter.

To power down the server:

1. Shut down the server operating system as directed by the operating system instructions.
2. Press the Front Unit Identification LED switch on the server front panel ❶. The Rear Unit Identification LED switch illuminates.
3. Press the server Power On/Standby switch to place the server in standby mode ❷.

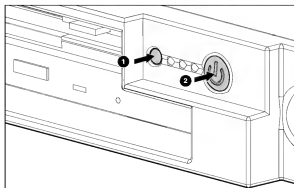


Figure 2-1: Front Unit Identification LED switch and Power On/Standby switch

4. At the rear of the server, locate the illuminated Rear Unit Identification LED switch that identifies the server being serviced.

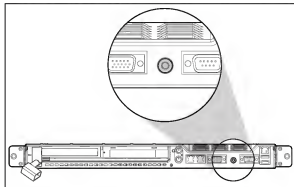


Figure 2-2: Rear Unit Identification LED switch

5. Disconnect the power cord.

Removing the Server from the Rack

Depending on the rail option deployed on the server, perform one of the following:

- For the standard fixed rail deployment, disconnect all the peripherals cables and loosen the thumbscrew that holds the fixed cable tray to the server. Extend and remove the server from the rack. Place the server on a flat level workspace.
- For the Sliding Rails and Cable Management Solution, extend the server to its fullest extent from the rack.

Reverse these procedures to replace the server into the rack.

Server Access Panel

To remove the access panel:

1. Press and hold down the hood latches ❶.
2. Holding the latches down, slide the access panel towards the rear of the server about 0.5 inch (1.25 cm) and lift the panel to remove it ❷.

The server is now ready for servicing.

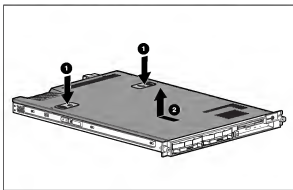


Figure 2-3: Removing the access panel

Reverse steps 1 through 2 to replace the access panel.

Mass Storage Devices

The Compaq ProLiant DL360 Generation 2 server supports up to four mass storage devices:

- Up to two 1-inch, hot-plug SCSI hard drives
- Low-profile CD-ROM drive
- Low-profile 3.5-inch, 1.44-MB diskette drive:

This section describes the drive cage positions and removal and replacement procedures for these mass storage devices.

Drive Locations

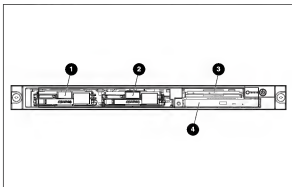


Figure 2-4: Server drive positions

Table 2-1: Server Drive Locations

Location	Drive	SCSI ID
1	Hot-plug drive cage for a 1-inch height hot-plug SCSI hard drive	0
2	Hot-plug drive cage for a 1-inch height hot-plug SCSI hard drive	1
3	Low-profile 3.5-inch, 1.44 diskette drive	-
4	Low-profile CD-ROM drive	-

CD-ROM Drive

The server is delivered with a low-profile diskette drive and a low-profile CD-ROM drive. The CD-ROM and the diskette drive may be removed independently of each other.



CAUTION: Do not operate the server without a CD-ROM drive installed. Failure to install a CD-ROM can lead to improper cooling and may damage the system.

To remove the CD-ROM drive:

1. Press the Power On/Standby switch to place the server in standby mode.
2. Push the center of the dual action eject button ❶ to release the locking latch. Continue to push the square body of the button to push the CD-ROM drive forward out of the chassis.
3. Remove the CD-ROM from the server ❷.

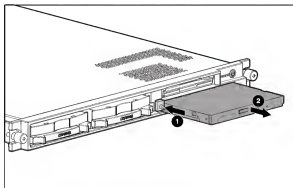


Figure 2-5: Removing the CD-ROM drive

To replace the CD-ROM drive:

1. Align the CD-ROM with the empty bay and slide the assembly into the chassis until it is fully seated.

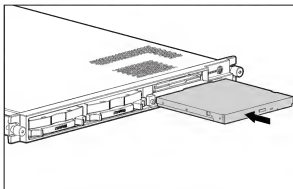


Figure 2-6: Aligning and installing the CD-ROM drive

2. Press the Power/On Standby switch to power on the server, and resume normal operations.

Low Profile Diskette Drive

To remove the diskette (floppy) drive:



CAUTION: Do not operate the server without a diskette drive installed. Failure to install a diskette drive can lead to improper cooling and may damage the system.

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. To remove the diskette drive locking tab, turn the thumbscrew counterclockwise and remove the tab ❶.
5. Push the diskette drive from the rear to release it from the backplane connector ❷ and pull the drive forward out of the chassis ❸.

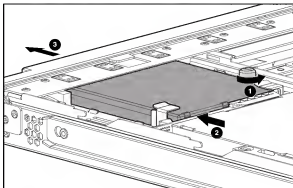


Figure 2-7: Removing the diskette drive.

To replace the diskette drive:

1. Insert the diskette drive through the opening in the front panel ❶.
2. Align the connectors on the backplane and the rear of the diskette drive and push them together ❷.
3. Replace the diskette drive locking tab and turn the thumbscrew clockwise to secure the drive ❸.

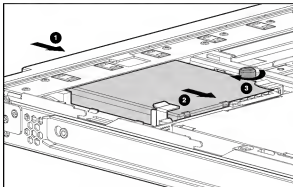


Figure 2-8: Installing the diskette drive.

4. Replace the access panel. See "Server Access Panel" in this chapter.
5. Replace the server in the rack. See "Removing the server from the Rack" in this chapter.
6. Connect the power cord.
7. Press the Power On/Standby switch to power on the server and resume normal operations.

Hot-Plug SCSI Hard Drive Blank



CAUTION: Do not operate the server without a SCSI hard drive or a SCSI hard drive blank installed. Failure to install a SCSI hard drive or a SCSI hard drive blank can lead to improper cooling and may damage the system.

To remove a hot-plug SCSI hard drive blank:

1. Press the release button ❶.
2. Pull the blank out of the drive bay ❷.

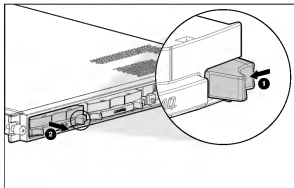


Figure 2-9: Removing a hard drive blank

To replace the blank, slide the blank into the bay until it clicks, locking into place.

Hot-Plug SCSI Hard Drives

To assess a hard drive's status, you must observe and understand the hot-plug SCSI hard drive status LEDs. For a detailed explanation of hard drive status LEDs, see Chapter 5, "Connectors, Switches, Jumpers and Status LED Indicators."



WARNING: Read "Hot-plug Hard Drive Replacement Guidelines" in the *Compaq Servers Troubleshooting Guide* prior to removing a hard drive.



CAUTION: Do not operate the server without a SCSI hard drive or a SCSI hard drive blank installed. Failure to install a SCSI hard drive or a SCSI hard drive blank can lead to improper cooling and may damage the system.

To remove a hot-plug SCSI hard drive:

1. Press the release button to unlock the lever on the hard drive ❶.
2. Pull the ejector lever to release the SCSI hard drive from the cage ❷.
3. Pull the drive to remove it from the cage ❸.

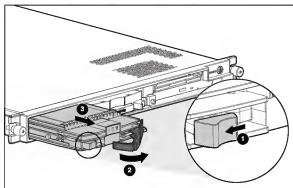


Figure 2-10: Removing a hot-plug SCSI hard drive

To replace the hard drive:

1. Slide the drive into the cage until it clicks ❶.
2. Close the lever to lock the drive in place ❷.

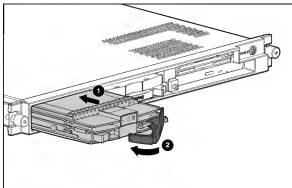


Figure 2-11: Installing a hot-plug SCSI hard drive

SCSI Backplane

To remove the SCSI backplane:

1. Power down the server. See "Powering Down the Server" earlier in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Remove the hot-plug SCSI hard drives. See "Hot-Plug SCSI Hard Drives" earlier in this chapter.
5. Loosen the system board thumbscrew ❶ and remove the thumbscrew assembly ❷ that secures the SCSI backplane to the system board.

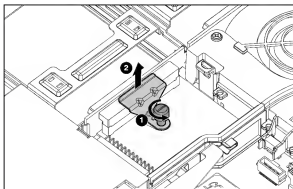


Figure 2-12: Removing the system board thumbscrew assembly

6. Carefully pull back and hold the plastic retaining clip ❶.
7. Remove the SCSI backplane by lifting it straight up from system board until it disengages from the system board connector.

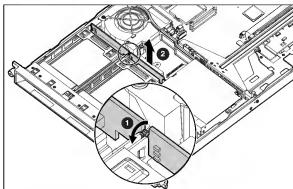


Figure 2-13: Removing the SCSI backplane

Reverse steps 1 through 7 to replace the SCSI backplane.

PCI Riser Board Assembly

To remove the PCI riser board assembly:

1. Power down the server. See "Powering Down the Server" earlier in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" earlier in this chapter.
4. Disconnect any cables leading from any current expansion boards to the system board.
5. Lift the expansion board retaining lever.

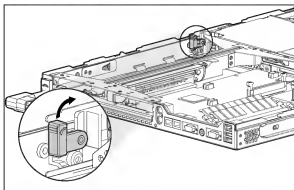


Figure 2-14: Lifting the expansion board retaining lever (expansion boards removed for clarity)

6. Unlock the PCI riser board assembly by disengaging the locking latch ❶.
7. Lift the PCI riser board assembly ejector ❷.
8. Slide the assembly toward the outside edge of the server to release the assembly from the server chassis ❸.
9. Lift the assembly from the server chassis ❹.

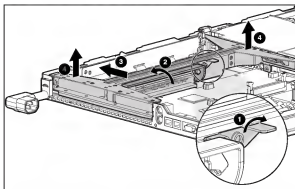


Figure 2-15: Removing the PCI riser board assembly (expansion boards removed for clarity)

Reverse steps 1 through 9 to replace the PCI riser board assembly.

Expansion Board Slot 1

To remove an expansion board from slot 1:

1. Power down the server. See “Powering Down the Server” earlier in this chapter.
2. Remove the server from the rack. See “Removing the Server from the Rack” in this chapter.
3. Remove the access panel. See “Server Access Panel” earlier in this chapter.
4. Remove the PCI riser board assembly. See “PCI Riser Board Assembly” in this chapter.
5. Slide the expansion board retaining clip out from the assembly ❶.
6. Slide the expansion board out of the expansion slot ❷.

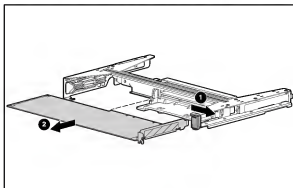


Figure 2-16: Removing an expansion board from slot 1



CAUTION: Always ensure that an expansion board or expansion slot cover is installed before powering up and operating the server. Failure to install either an expansion board or expansion slot cover can lead to improper cooling and may damage the system.

Reverse steps 1 through 6 to replace the expansion board in the expansion slot. Be sure that the expansion board slides into the guiding groove, aligning with the slot.

Expansion Board Slot 2

To remove an expansion board in slot 2:

1. Power down the server. See "Powering Down the Server" earlier in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" earlier in this chapter.
4. Remove the PCI riser board assembly. See "PCI Riser Board Assembly" earlier in this chapter.
5. Slide the expansion board out of the expansion slot.

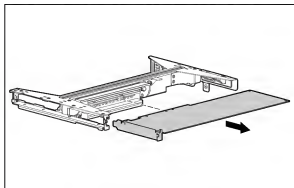


Figure 2-17: Removing an expansion board from slot 2



CAUTION: Always ensure that an expansion board or expansion slot cover is installed before powering up and operating the server. Failure to install either an expansion board or expansion slot cover can lead to improper cooling and may damage the system.

Reverse steps 1 through 5 to install an expansion board into slot 2.

Air Baffle

To remove the air baffle:

1. Power down the server. See "Powering Down the Server" earlier in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" earlier in this chapter.
4. Remove the PCI riser board assembly. See "PCI Riser Board Assembly" in this chapter.



CAUTION: Always remove the PCI riser board assembly before removing the air baffle. Failure to remove the assembly may result in damage to expansion boards.

5. Remove the air baffle by lifting it straight up from the system board.

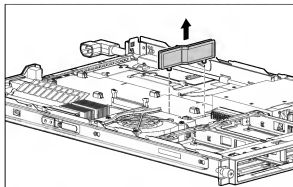


Figure 2-18: Removing the air baffle

Reverse steps 1 through 5 to replace the air baffle.

Fan Assembly

To remove the fan assembly:

1. Power down the server. See “Powering Down the Server” earlier in this chapter.
2. Remove the server from the rack. See “Removing the Server from the Rack” in this chapter.
3. Remove the access panel. See “Server Access Panel” earlier in this chapter.
4. Remove the PCI riser board assembly. See “PCI Riser Board Assembly” in this chapter.
5. Remove the air baffle. See “Air Baffle” earlier in this chapter.
6. Press in the retaining clips on either side of the fan assembly ❶ and lift the assembly from the chassis ❷.

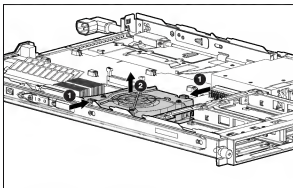


Figure 2-19: Removing the fan assembly

Reverse steps 1 through 6 to replace the fan assembly, ensuring that the retaining clips lock into place.

AC Power Cord and Line Filter

To remove the AC power cord and line filter:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" earlier in this chapter.
4. Remove the PCI riser board assembly. See "PCI Riser Board Assembly" in this chapter.
5. Using a finger, lift the line filter off the chassis retaining stud and release the line filter from the chassis mount ❶.
6. Slide the power cord retaining clip ❷ upward to free the AC power cord.

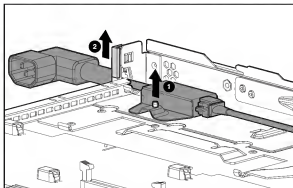


Figure 2-20: Releasing the AC power cord and line filter

7. Lift the AC power cord and filter free of the server chassis.

8. Loosen the retaining clip screw ❶, with a screwdriver, and slide the retaining clip clear of the release latch ❷.

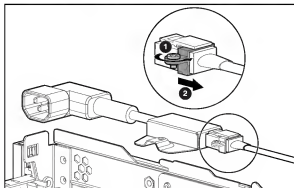


Figure 2-21: Sliding off the retaining clip

9. Press the release latch ❶ and pull the filter to disconnect the power cord and line filter assembly from the server internal power cord ❷.

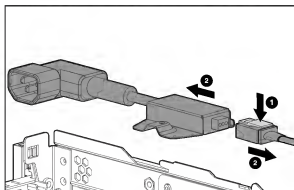


Figure 2-22: Disconnecting the line filter from the server internal power cord

Reverse steps 1 through 9 to replace the AC power cord and filter.

Power Supply

To remove the power supply:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Remove the PCI riser board assembly. See "PCI Riser Board Assembly" in this chapter.
5. Remove the air baffle. See "Air Baffle" in this chapter.
6. Remove the AC power cord and filter. See "AC Power Cord and Filter" in this chapter.
7. Release the AC power cord from its routing clips.
8. Lift the power supply retaining latch ❶.
9. Slide the power supply toward the outside edge of the server until it disengages from the system board connector ❷.
10. Tilt the outside edge of the power supply upward and lift to remove it from the chassis ❸.

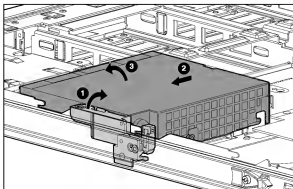


Figure 2-23: Removing the power supply

Reverse steps 1 through 10 to replace the power supply, aligning the pins with the system board connector when inserting the power supply.

Cable Protector

To remove the cable protector:

1. Complete the preparation procedures. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Remove the PCI riser board assembly. See "PCI Riser Board Assembly" in this chapter.
5. Remove the air baffle. See "Air Baffle" in this chapter.
6. Remove the AC power cord and filter. See "AC Power Cord and Filter" in this chapter.
7. Remove the power supply. See "Power Supply" in this chapter.
8. Lift the front edge of the cable protector until it clears the CD ROM/Diskette backplane.
9. Pull the cable protector forward until it is free from its retaining slots. Lift the cable protector from the server.

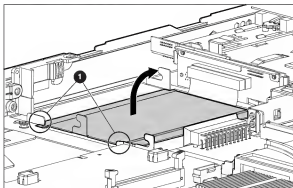


Figure 2-24: Removing the cable protector

- Retaining slots

Reverse steps 1 through 9 to replace the cable protector.

CD-ROM and Diskette Drive Cable and Backplane

To remove the CD-ROM and diskette drive cable and backplane:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Remove the CD-ROM and diskette drives. See "Replacing the CD-ROM Drive" and "Replacing the Floppy Drive" in this chapter for removal procedures.
5. Remove the PCI riser board assembly. See "PCI Riser Board Assembly" in this chapter.
6. Remove the air baffle. See "Air Baffle" in this chapter.
7. Remove the AC power cord and line filter. See "AC Power Cord and Line Filter" in this chapter.
8. Remove the power supply. See "Power Supply" in this chapter.
9. Remove the cable protector. See "Cable Protector" in this chapter.
10. Disconnect the 80-pin connector from the system board.

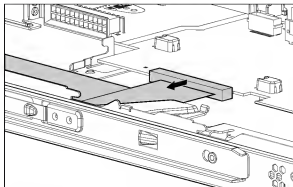


Figure 2-25: Disconnecting the 80-pin connector from the system board

11. Slide the cable from underneath the routing sleeve ❶. Refer to Chapter 3 for the cable routing diagram.
12. Carefully pull back and hold the plastic retaining clip ❷.
13. Lift the backplane vertically until it disconnects from the user interface board and clears the guiding grooves ❸.

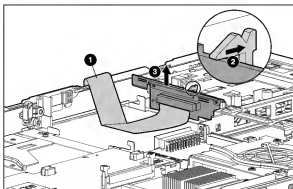


Figure 2-26: Removing CD-ROM and diskette drive cable and backplane from the chassis

Reverse steps 1 through 13 to replace the CD-ROM and diskette drive cable and backplane.

User Interface Board

To remove the user interface board:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Remove the CD-ROM and diskette drives. See "Replacing the CD-ROM Drive" and "Replacing the Floppy Drive" in this chapter for removal procedures.
5. Remove the PCI riser board assembly. See "PCI Riser Board Assembly" in this chapter.
6. Remove the air baffle. See "Air Baffle" in this chapter.
7. Remove the AC power cord and filter. See "AC Power Cord and Filter" in this chapter.
8. Remove the power supply. See "Power Supply" in this chapter.
9. Remove the cable protector. See "Cable Protector" earlier in this chapter.
10. Remove the CD-ROM and diskette drive backplane. See "CD-ROM and Diskette Drive Backplane" earlier in this chapter.
11. Slide the user interface board toward the rear of the server and lift to remove.

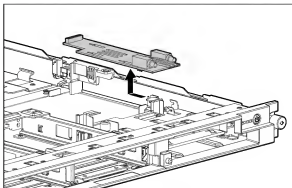


Figure 2-27: Removing the user interface board

Reverse steps 1 through 11 to replace the user interface board.

Memory

The ProLiant DL360 Generation 2 server ships standard with two 128-MB Synchronous DRAM (SDRAM) Dual Inline Memory Modules (DIMMs) installed in DIMM sockets 1 and 2 (Bank A).

Observe the following guidelines when installing additional memory:

- SDRAM DIMMs must be 133-MHz, registered, 3.3-volt, 72-bit wide, with Error Correction Code (ECC). No other DIMMs are compatible with the server.
- Use only 128-, 256-, 512-MB, or 1-GB SDRAM DIMMs. DIMMs must be installed in pairs and be of the same size.
- Install DIMMs only in one direction. Be sure to match the notch on the module with the tab on the DIMM slot. Before seating the DIMM in the slot, ensure that the module key is fully inserted.
- Memory can be expanded to a maximum of 4-GB of memory.
- Use only Compaq SDRAM DIMMs. DIMMs from other sources may affect data integrity.
- Install SDRAM DIMM modules one at a time in the sequential order starting with DIMM socket 1.

SDRAM DIMMs

The Compaq ProLiant DL360 Generation 2 server ships standard with two SDRAM DIMMs installed in DIMM sockets 1 and 2 (Bank A). The following figure and table show the location of the DIMM slots on the system board.

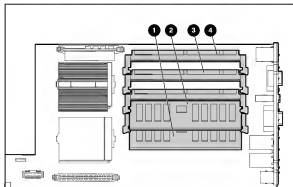


Figure 2-28: DIMM sockets identified on the system board

Table 2-2: DIMM Socket Identification

Item	Description
❶	DIMM socket 1A populated with standard 128-MB DIMM
❷	DIMM socket 2A populated with standard 128-MB DIMM
❸	DIMM socket 3B
❹	DIMM socket 4B



CAUTION: Electrostatic discharge may damage electronic components. Be sure you are properly grounded before beginning any installation procedure. See "Electrostatic Discharge Information" earlier in this chapter.

To remove a SDRAM DIMM:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Press both SDRAM DIMM slot latches outward ❶.
5. Lift the SDRAM DIMM from the socket ❷.

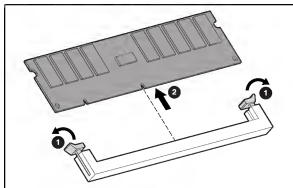


Figure 2-29: Removing an SDRAM DIMM

Reverse steps 1 through 5 to replace a SDRAM DIMM.

IMPORTANT: A memory module can be installed only one way. Be sure to match the key slots on the module with the tabs on the memory slot. Push the module down into the slot, ensuring that the module is fully inserted and properly seated.

IMPORTANT: DIMMs must be installed in pairs and be of the same size.

IMPORTANT: DIMMs must be 133-MHz registered SDRAM, 3.3-volts, 72-bits wide, and ECC.

Processors

The server can support up to two processors. Each processor has an associated Processor Power Module (PPM) that must be present for proper operation of the server.

Figure 2-30 and Table 2-3 show the location of the processors and PPMs on the system board.

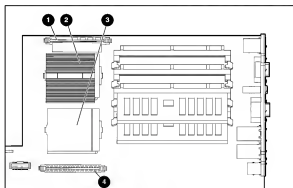


Figure 2-30: Processor and PPM socket locations

Table 2-3: Processor and PPM Sockets

Item	Description
❶	PPM socket 1 (must always be populated)
❷	Processor socket 1 (must always be populated)
❸	Processor socket 2
❹	PPM socket 2
Note: A PPM must be installed with a processor.	



WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.



CAUTION: Processor socket 1 must be populated at all times. Failure to follow this process results in the system failing to boot and halting during the POST. This error will result in the system not functioning properly.

To remove a processor:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Push down on the integrated heatsink-retaining clip **1** and release it from the retaining tab on the processor socket **2**.
5. Remove the heatsink and integrated thermal pad from the processor **3**.
6. Lift the processor locking lever **4**.
7. Lift the processor from the socket **5**.

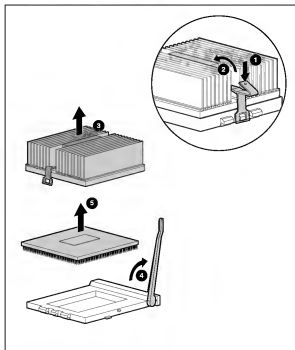


Figure 2-31: Removing the processor



CAUTION: Always use a new thermal pad and heatsink when replacing processors. Failure to use new components may result in damage to the processor.



CAUTION: Heatsinks have an integrated, plastic-covered thermal pad. Remove the plastic cover from the new heatsink to expose the adhesive side of the thermal pad before placing the heatsink on the processor.

Reverse steps 1 through 7 to replace the processor.

Processor Power Module

Each processor has an associated Processor Power Module (PPM). Figure 2-30 and Table 2-3 show the location of the processors and PPMs on the system board.

To remove a PPM:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Open the PPM socket latches ❶.
5. Lift the PPM from the socket ❷.

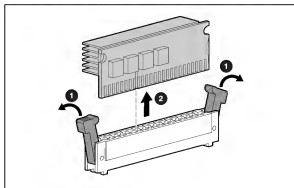


Figure 2-32: Removing a PPM

Repeat steps 1 through 5 to replace a PPM.

Battery

If the server no longer automatically displays the correct date and time, it may be necessary to replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.



WARNING: This server contains either an internal lithium manganese dioxide, or a vanadium pentoxide battery. There is risk of fire and burns if the battery pack is not handled properly. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose to temperatures higher than 60°C.
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.



CAUTION: Loss of BIOS settings will occur if the lithium battery is removed. BIOS settings must be reconfigured whenever the battery is replaced.



CAUTION: Batteries, battery packs, and accumulators should not be disposed of along with general household waste. In order to forward them for recycling or proper disposal, please use the public collection system, or return them to your authorized Partners or their agents.

IMPORTANT: Run the System Utility to configure the system after replacing the battery. See Chapter 4, "Diagnostic Tools" for more information

To remove the system board battery:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Locate the battery holder on the system board ❶.

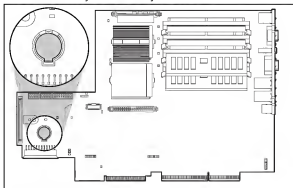


Figure 2-33: Battery location

5. Push the battery security clip away from the center of the holder ❷ and remove the battery ❸.

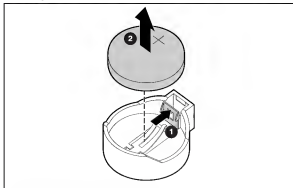


Figure 2-34: Removing the battery

Reverse steps 1 through 5 to replace the battery.

System Board

To remove the system board:

1. Power down the server. See "Powering Down the Server" in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" in this chapter.
3. Remove the access panel. See "Server Access Panel" in this chapter.
4. Remove the hot-plug SCSI hard drive(s). See "Hot-Plug SCSI Hard Drives" in this chapter.
5. Remove the SCSI backplane. See "SCSI Backplane" in this chapter.
6. Remove the PCI riser board assembly. See "PCI Riser Board Assembly" in this chapter.
7. Remove the air baffle. See "Air Baffle" in this chapter.
8. Remove the fan assembly. See "Fan Assembly" in this chapter.
9. Remove the AC power cord and filter. See "AC Power Cord and Filter" in this chapter.
10. Remove the power supply. See "Power Supply" in this chapter.
11. Disconnect the 80-pin connector from the system board. See "CD-ROM and Diskette Drive Cable and Backplane" in this chapter.
12. Remove any SDRAM DIMMs. See "SDRAM DIMMs" in this chapter.
13. Remove the processor(s). See "Processors" in this chapter.
14. Remove the PPM(s). See "Processor Power Module" in this chapter.
15. Locate the alignment keys and keyhole locations ❶ through ❹ on the system board.

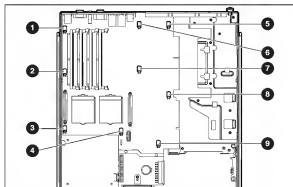


Figure 2-35: Locating alignment keys and keyhole locations

16. Slide the system board toward the front of the chassis 0.5 inch (1.5 cm) ❶, ensuring that the board unseats from all the alignment keys.
17. Tilt the front edge of the system board upward and lift it off the alignment keys ❷.

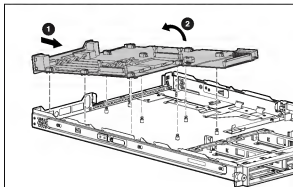


Figure 2-36: Removing the system board



CAUTION: Always use a new heatsink with integrated thermal pad when replacing processors. Failure to use new components may result in damage to the processor.

Reverse steps 1 through 17 to replace the system board. When reinstalling the processors on the new system board, discard used heatsinks and thermal pads. Reinstall the processors with new heatsinks and integrated thermal pads that come in the system board spare parts kit. For more information, see “Processors” earlier in this chapter.

Cable Routing Diagram

The Compaq ProLiant DL360 Generation 2 server contains only one internal cable.



CAUTION: When routing cables, always ensure that the cables are not in a position where they will be pinched or crimped

CD-ROM/Diskette Drive Backplane Cabling

The following figure identifies the proper routing of the cable leading from the CD-ROM/diskette drive backplane to the system board.

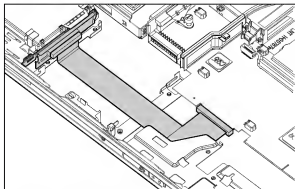


Figure 3-1: CD ROM/diskette backplane cable (PCI riser board assembly, air baffle, power supply and cable protector removed for clarity)

Diagnostic Tools

This chapter provides an overview of the diagnostic and management tools available for the Compaq ProLiant DL360 Generation 2 server. For more detailed information and procedures refer to the *Compaq Server Troubleshooting Guide* on the Server Documentation CD.

Diagnostic Tools Overview

The following tools are available to diagnose problems, test hardware, and monitor and manage server operations.

Table 4-1: Diagnostic Tools

Tool	Description	How to run the tool
Array Diagnostics Utility (ADU)	A Windows-based tool designed to run on all Compaq systems that support Compaq array controllers. Two main functions of ADU are to collect all possible information about the array controllers in the system, and generate a list of detected problems.	Run ADU from the SmartStart CD. For a complete list of ADU error messages, refer to the <i>Compaq Servers Troubleshooting Guide</i> .
Automatic Server Recovery (ASR)	ASR automatically restarts the server after a catastrophic operating system failure. • Available Recovery – software error recovery and environmental recovery • Unattended Recovery – logs the error information to the IML, resets the server and tries to restart the operating system	Run RBSU and set ASR to 'Enable'

continued

Table 4-1: Diagnostic Tools *continued*

Tool	Description	How to run the tool
Compaq Server Diagnostics Program	Utility to assist testing and/or verifying operation of Compaq hardware. If problems are found, Compaq Server Diagnostics isolates failure(s) down to replaceable parts, whenever possible.	Access Compaq Server Diagnostics when Power-On-Self-Test (POST) detects a system configuration error. For a complete list of POST error messages, refer to the <i>Compaq Servers Troubleshooting Guide</i> . Compaq Server Diagnostics can be downloaded from the Compaq website www.compaq.com/support/files
Compaq Inspect Utility	The Inspect utility provides a report detailing system information.	The Inspect utility can be run from either the main menu of the System Configuration Utility or the Compaq Diagnostics Program.
Compaq Insight Manager XE	A client/server application used to remotely manage Compaq hardware in a network environment. Reports hardware fault conditions (both failure and prefailure) and collects data for reporting and graphing.	For more information, refer to the Compaq Management CD and the <i>Compaq Insight Manager User Guide</i> .
Compaq SmartStart for Servers	The intelligent way to set up a Compaq server. The Compaq SmartStart for Servers CD includes the ROMPaq Utility, driver updates, and assistance in installing operating systems.	For more information refer to the Server Setup and Management pack.
Compaq Survey Utility	Compaq Survey Utility gathers critical hardware and software information on servers running Windows NT, Windows 2000 or Novell NetWare. If a significant change occurs between data-gathering intervals, previous information is marked, and the survey text file is overwritten to reflect the latest configuration and changes since last configuration. This allows a historical record of change events for server hardware and software.	Install the Compaq Survey Utility from the SmartStart CD, Compaq Integration Maintenance Utility, or from the Compaq Management CD.

continued

Table 4-1: Diagnostic Tools *continued*

Tool	Description	How to run the tool
Integrated Management Log (IML)	A log of system events, such as system failures or nonfatal error conditions. View events in the Integrated Management Log from within: - Compaq Insight Manager XE - Compaq Survey Utility - OS-specific IML utilities	The Integrated Management Log requires Compaq operating system-dependent drivers. Refer to Compaq Support Software CD for instructions on installing the appropriate drivers.
ROM-Based Setup Utility (RBSU)	RBSU configures the hardware installed in or connected to the server. Specifically, it can: - Store configuration information in nonvolatile memory - Manage processor upgrades, network interface cards and mass storage devices - Assist in installing an operating system - Configure ports and IRQs, if required	Run RBSU by pressing the F9 key during POST
ROMPaq™ Utility	The ROMPaq Utility checks the system and provides a choice of available ROM revisions and controller firmware.	Run this utility from the SmartStart CD.
SmartStart Diskette Builder	The SmartStart Diskette Builder is a utility that uses data stored on the SmartStart CD to create support diskettes. Support diskettes can be created for specific configuration needs or for software that cannot be used directly from the SmartStart CD.	Run the diskette builder tool from the SmartStart CD.

Connectors, Switches, Security Override Jumper and Status LED Indicators

This chapter describes the various connectors, switches, security override jumper, and LED status indicators that are on the Compaq ProLiant Generation 2 server.

Connectors

This section contains figures and tables showing the connector locations on the rear panel, the PCI riser board assembly and the system board of the server.

Rear Panel Connectors

Figure 5-1 and Table 5-1 show and describe the connectors on the rear panel of the server.

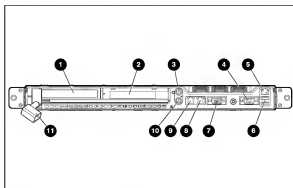


Figure 5-1: Rear Panel Connectors

Table 5-1: Rear Panel Connectors

Item	Description
1	Expansion slot 1
2	Expansion slot 2
3	Mouse connector (green)
4	Serial connector (teal)
5	RJ-45 Integrated Lights-Out (ILO) management port
6	USB ports 1 and 2
7	Video connector (blue)
8	RJ-45 Gb Ethernet connector at 10/100/1000 Mb/s for NIC 2
9	RJ-45 Gb Ethernet connector at 10/100/1000 Mb/s for NIC 1
10	Hot-plug keyboard connector (purple)
11	Power connector

Riser Board Expansion Slots

Figure 5-2 and Table 5-2 show and describe the server expansion slots.

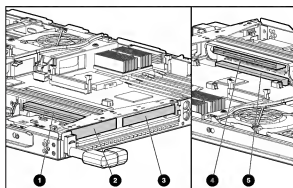


Figure 5-2: Riser board expansion slots

Table 5-2: Riser Board Expansion Slots

Item	Description
1	Slot 1 64-bit/3.3V slot with 528-MB/s data transfer
2	Slot 1 cover
3	Slot 2 cover
4	Slot 2 64-bit/3.3V slot with 528-MB/s data transfer
5	System board connector

System Board Connectors and Sockets

Figure 5-3 and Table 5-3 show and describe the system board connectors and sockets.

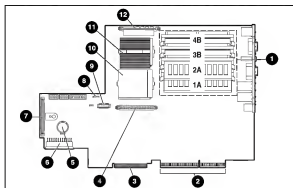


Figure 5-3: System board connectors and sockets

Table 5-3: System board connectors and sockets

Item	Description	Item	Description
1	DIMM sockets (1-4)	7	SCSI backplane connector
2	PCI riser board assembly connector	8	Fan connector
3	CD-ROM/diskette backplane cable connector	9	Remote Insight connector
4	Processor power module (PPM) socket 2	10	Processor socket 2
5	Battery connector (populated)	11	Processor socket 1 (populated)
6	Power supply connector	12	Processor power module (PPM) socket 1 (populated)

System Board Switches and Security Override Jumper

This section indicates and describes the functions of the switches and security override jumper on the server system board for configuration and support purposes.

The Compaq ProLiant DL360 Generation 2 server has three switch banks (SW2, SW3 and SW4) and an Integrated Lights-Out (iLO) security override jumper. Figure 5-4 and Table 5-4 identify the switches.

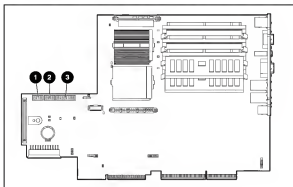


Figure 5-4: System board switches

Table 5-4: System Board Switches

Item	Description
❶	Maintenance switch (SW2)
❷	Chassis ID switch (SW3)
❸	Miscellaneous support switch (SW4)

System Maintenance Switch (SW2)

Switch settings are pre-configured for shipping. All settings are reserved. Do not change these settings unless directed.

IMPORTANT: All switches are defaulted to OFF



CAUTION: Do not change switch settings because incorrectly set switches may result in damage to the server.

System Chassis ID Switch (SW3)

Table 5-5 defines the function for each setting on SW3.

Table 5-5: Chassis ID (SW3) Switch Settings

Switch	On/Off	Function
S1	Off	Chassis ID - Reserved for future use
S2	Off	Chassis ID - Reserved for future use
S3	Off	Chassis ID - Reserved for future use
S4	Off	Reserved

System Miscellaneous Support Switch (SW4)

Table 5-6 defines the function for each setting on SW4.

Table 5-6: Miscellaneous Support Switch (SW4)

Switch	On/Off	Function
S1	Off *	Reserved
S2	On	NVRAM Write Disable (Prevents system reconfiguration)
	Off *	NVRAM Write Enable (Allow system reconfiguration)
S3	On *	Rack Mount (Indicates system is rack mounted)
	Off	Tower Configuration
S4	On	Floppy Boot Override
	Off*	Floppy Boot Control (Allowed by configuration)
S5	On	Power On Password Disabled
	Off *	Power On Password Enabled (Setup in configuration)
S6	On	NVRAM Maintenance (Clears NVRAM prior to reconfiguration)
	Off *	NVRAM Enabled (Current contents valid or ready for reconfiguration. Used in conjunction with S2)
S7	On	IIC Write Enabled
	Off *	IIC Write Protect
S8	Off *	Reserved – Default position

An asterisk (*) denotes the normal default operating position of a switch

Integrated Lights-Out Security Override Jumper

The iLO Security Override allows the administrator full access to the iLO processor. This will be necessary in the event of a lost or forgotten administrator password and also to flash the iLO boot-block. The iLO Security Override is a jumper located inside the server and cannot be activated without removing the server access panel.

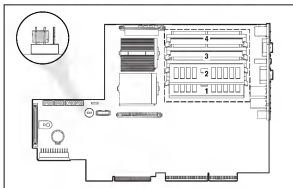


Figure 5-5: Integrated Lights-Out security override jumper (non-override position)

Using the Integrated Lights-Out Security Override Jumper

The iLO Security Override Jumper allows emergency access to the administrator with physical control of the server's system board. Setting the iLO Security Override Jumper allows login access, with all privileges, without a user ID and password.

To set the iLO Security Override Jumper:

1. Power down the server. See "Powering Down the Server" in Chapter 2.
2. Remove the server from the rack. See "Removing the Server from the rack" in Chapter 2.
3. Remove the server access panel. See "Server Access Panel" in Chapter 2.
4. Locate the three pins of J29 and move the jumper from the front and center pins to the center and rear pins to override password security. J29 is to the front of the 30 pin Remote Insight Connector.
5. Replace the server access panel and put the server back into the rack by reversing steps 2 and 3.
6. Press the Power/On Standby switch to power on the server.
7. Logon to the iLO and reset the passwords.

A warning message will be displayed on the iLO Web pages indicating the iLO Security Override function is currently active. An iLO log entry will be added recording the use of the iLO Security Override. An SNMP alert may also be sent upon setting or clearing the iLO Security Override function.

In the unlikely event it is necessary, enabling the iLO Security Override also enables the iLO boot-block to be flashed. The boot-block will be exposed until the iLO is reset. Compaq recommends the iLO be disconnected from the network until the reset is complete.

To reset the iLO Security Override Jumper:

1. Power down the server. See "Powering Down the Server" in Chapter 2.
2. Remove the server from the rack. See "Removing the Server from the rack" in Chapter 2.
3. Remove the server access panel. See "Server Access Panel" in Chapter 2.
4. Remove the Security Override Jumper from the rear and center pins of J29 and place it between the front and center pins.
5. Replace the server access panel and put the server back into the rack by reversing steps 2 and 3.
6. Press the Power/On Standby switch to power on the server and resume normal operation.

Status LED Indicators

The Compaq ProLiant DL360 Generation 2 server contains several sets of LED indicators that indicate the status of hardware components and settings.

- Front panel status LED indicators
- Rear panel status LED indicators
- Hot-plug SCSI hard drive indicators
- System board status LED indicators

Front Panel Status LED Indicators

The front panel contains three LEDs and two illuminated switches to indicate server status. Figure 5-6 and Table 5-7 identify, describe and indicate the status of the LEDs.

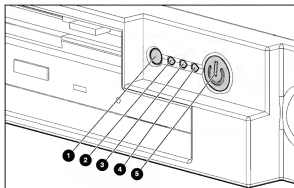


Figure 5-6: Front panel status LED indicators

Table 5-7: Front Panel Status LED Indicators

Item	LED Description	Status
1	Front Unit Identification LED switch	On = Activated Off = Deactivated Blinking = Remote Console Active
2	NIC 2 network link/activity	On = Linked to network Off = No link Blinking = Activity
3	NIC 1 network link/activity	On = Linked to network Off = No link Blinking = Activity
4	Internal Health	Green = System healthy Amber = System degraded Red = System failure
5	Power On/Standby switch and embedded LED	Amber = Standby Green = On Off = Power cord not attached to the server or power supply failure

Rear Panel Status LED Indicators

Figure 5-7 and Table 5-8 identify and describe each LED.

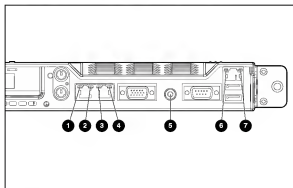


Figure 5-7: Rear panel LEDs

Table 5-8: Rear Panel LEDs

Item	LED Description	Status
❶	NIC 1 activity	Green = activity Off = no activity
❷	NIC 1 link	Green = network connected Off = network disconnected
❸	NIC 2 activity	Green = activity Off = no activity
❹	NIC 2 link	Green = network connected Off = network disconnected
❺	Rear unit identification LED switch	On = Activated Off = Deactivated Blinking = Remote Console Active
❻	Integrated Lights-Out (iLO) Management Port activity	Green = activity Off = no activity
❼	Integrated Lights-Out (iLO) Management Port activity	Green = port connected Off = port disconnected

Hot-Plug SCSI Hard Drive Status LED Indicators

Each hot-plug SCSI hard drive has three LED indicators located on the front of the drive. Use Figure 5-8 and Table 5-9 to identify and describe the status of the drive.

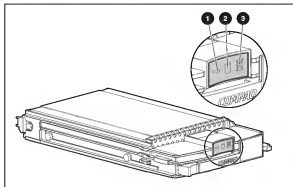


Figure 5-8: Hot-plug SCSI hard drive LED indicators

- The LED on the left indicates Drive Activity ❶, where **on** indicates activity and **off** indicates no activity by the drive.
- The center LED indicates Online Status ❷, where **flashing** indicates an active online condition and **off** indicates an inactive online condition.
- The LED on the right indicates Fault Status ❸, where **flashing** indicates fault-process activity and **off** indicates a no fault-process activity.

Table 5-9: Hot-Plug Hard Drive LED Indicator Status Combinations

Activity	Online	Fault	Condition
On	Off	Off	Do not remove the drive. Removing a drive during this process will cause data loss. The drive is being accessed and is not configured as part of an array
On	Flashing	Off	Do not remove the drive. Removing a drive during this process will cause data loss. The drive is rebuilding or undergoing capacity expansion.
Flashing	Flashing	Flashing	Do not remove the drive. Removing a drive during this process will cause data loss. The drive is part of an array being selected by the Array Configuration Utility -Or- The Options ROMPaq is upgrading the drive.
Off	Off	Off	OK to replace the drive online if a predictive failure alert is received and the drive is attached to an array controller. The drive is not configured as part of an array -Or- If this drive is part of an array, then a powered-on controller is not accessing the drive. -Or- The drive is configured as an online spare
Off	Off	On	OK to replace the drive online. The drive has failed, and has been placed off-line
Off	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online. The drive is online and configured as part of an array
On or Flashing	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online. The drive is online and being accessed

System Board Status LED Indicators

Use Figure 5-9 and Table 5-10 to identify the LED locations and status.

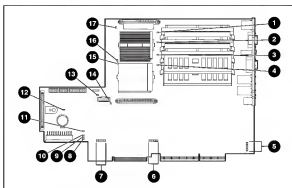


Figure 5-9: System Board LEDs

Table 5-10: System Board LEDs

Item	LED Description	Status
1	DIMM 4B failure	Amber = Memory failed Off = Normal
2	DIMM 3B failure	Amber = Memory failed Off = Normal
3	DIMM 2A failure	Amber = Memory failed Off = Normal
4	DIMM 1A failure	Amber = Memory failed Off = Normal
5	Diagnostic LED array	Smart Array 5i diagnostic array
6	Diagnostic LED array	ILO diagnostic array
7	Diagnostic LED array	System diagnostic array
8	Power supply	Green = Operational Off = Standby mode or Off
9	Power supply fan failure	Amber = Fan failed Off = Normal
10	Power supply failure	Amber = Power supply failed Off = Normal

continued

Table 5-10: System Board LEDs *continued*

Item	LED Description	Status
①	Riser failure	Amber = PCI riser assembly not seated or installed Off = Normal
②	Over-temperature	Amber = Temperature has exceeded OS cautionary level or critical hardware level Off = Temperature is OK
③	CPU Fan Failure	Amber = Fan Failed Off = Fan OK
④	Processor Power Module (PPM) 2	Amber = PPM2 failed Off = Normal
⑤	Processor 2 failure	Amber = Processor failed Off = Normal
⑥	Processor 1 failure	Amber = Processor failed Off = Normal
⑦	Processor Power Module (PPM) 1	Amber = PPM1 failed Off = Normal

System Board LEDs and Internal Health LED Status Combinations

When the internal health LED on the front panel illuminates either amber or red, the server is experiencing a health event. Combinations of illuminated system LEDs and the internal health LED indicate system status.

NOTE: For the internal health LED to provide pre-failure and system conditions, the system management driver must be installed.

The front panel health LED indicates only the current hardware status. In some situations, Compaq Insight Manager XE may report server status differently than the health/system board LEDs because the software tracks more system attributes.

Table 5-11: System LEDs and Internal Health LED Status Combinations

System Board LED and Color	Internal Health LED Color	Status
Processor failure, socket X (Amber)	Red	- Processor in socket X has failed. - Processor X has failed over to offline spare - Processor X is not installed in the socket - Processor X is unsupported. - Processors are mismatched (speed and/or type). - ROM detects a failed processor during POST
Processor failure, socket X (Amber)	Amber	Processor in the socket is in a pre-failure condition
PPM failure, slot X (Amber)	Red	- PPM in slot X has failed. - PPM is not installed in slot X - PPM is not installed in slot X, but the corresponding processor is installed

continued

Table 5-11: System LEDs and Internal Health LED Status Combinations *continued*

System Board LED and Color	Internal Health LED Color	Status
DIMM failure, slot X (Amber)	Red	- DIMM in slot X has failed - DIMM in slot X is an unsupported type - DIMM in slot X has experienced a multi-bit error
DIMM failure, slot X (Amber)	Amber	- DIMM in slot X has reached single-bit correctable error threshold - DIMM in slot X is in a pre-failure condition
DIMM failure, all slots in one bank (Amber)	Red	Interleaving error - DIMM is missing from the bank - DIMMs are mismatched within the bank
DIMM failure, all slots in all banks (Amber)	Red	No valid or usable memory is installed in the system
Over-temperature (Amber)	Red	- System has reached the operating system cautionary level - System has exceeded the hardware critical level
Riser (Amber)	Red	PCI riser is unseated
Fan (Amber)	Red	A CPU or Power Supply fan has failed

For more detailed server health information, use Compaq Insight Manager XE.

This chapter provides operating and performance specifications for the Compaq ProLiant DL360 Generation 2 server. The sections in this chapter are:

- System Unit
- Memory
- 1.44 MB diskette drive
- CD-ROM drive
- Wide Ultra3 SCSI Hard Drives

System Unit

Table 6-1: System Unit Specifications

Dimensions		
Height (without feet)	4.19 cm	1.65 in
Depth	65.45 cm	25.75 in
Width	42.55 cm	16.75 in
Weight (maximum)	11.81 kg	26 lb
Weight (no drives installed)	9.54 kg	21 lb
Input requirements		
Rated input voltage	100 VAC to 240 VAC	—
Rated input frequency	50 Hz to 60 Hz	—
Rated input current	2.8 A (110 V) to 1.4 A (220 V)	—
Rated input power	307 W	—
BTUs per hour	1048	—
Power supply output		
Rated steady-state power	180 W	—
Maximum peak power	200 W	—
Temperature range		
Operating (See note)	10°C to 35°C	50°F to 95°F
Shipping (See note)	-40°C to 70°C	-40°F to 158°F
Relative humidity (noncondensing)		
Operating (See note)	10% to 90%	—
Non-operating (See note)	5% to 95%	—
Maximum wet bulb temperature	28°C	82.4°F
Note: Operating temperature has an altitude derating of 1°C per 1,000 ft. No direct sunlight. Storage maximum humidity of 95% is based on a maximum temperature of 45°C. Altitude minimum for storage is 70 KPa.		

Memory

Table 6-2: SDRAM DIMM Specifications

Item	Description
Size	128 MB, 256 MB, 512 MB, 1GB
Speed	133 MHz
Width	72 bits
Upgrade requirements	Identical DIMMs must be installed in pairs in the same bank (A or B)
Note: Use only 128-, 256-, 512-MB or 1-GB, 72 bits wide, 3.3-volt, registered ECC SDRAM. SDRAM must be 133 MHz. Use Compaq SDRAM only	

Low-Profile 1.44-MB Diskette Drive

Table 6-3: Low-Profile 1.44-MB Diskette Drive Specifications

Item	Description
Size	88.9 mm (3.5 inch)
Led indicator (front panel)	Green
Read/Write capacity per diskette (high/low density)	1.44 MB/720 KB
Drives supported	1
Drive height	15.2 mm (0.6 inch)
Drive rotation	300 rpm
Transfer rate bits/sec (high/low)	500/250 Kbit/s
Bytes/sector	512
Sectors/track (high/low)	18/9
Tracks/side (high/low)	80/80
Access times	
Track-track (high/low)	6 ms/3 ms
Average (high/low)	174ms/94ms
Settling time	15 ms
Latency average	100 ms
Cylinders (high/low)	80/80
Read/write heads	2

Low-Profile IDE CD-ROM

Table 6-4: Low-Profile IDE CD-ROM Drive Specification

Item	Description
Applicable disk	CD-DA, CD-ROM (mode 1 and 2), CD-XA (mode 2, Form1 and 2), CD-1 Ready, CD-Extra, Photo CD (single and multiple session), CDI ready
Capacity	550 MB (mode 1, 12 cm) / 640 MB (mode 2, 12 cm)
Block size	2638, 2352 bytes (mode 0), 2352, 2340, 2336, 1024 bytes (mode 1), 2352, 2340, 2336, 2048, 1024 bytes (mode 2)
Dimensions	
Height	12.7 mm (0.5 inch)
Depth	130 mm (5.12 inch)
Width	131 mm (5.18 inch)
Weight	< 340 g (<11.96 oz)
Data transfer rate	
Sustained	150 KB/s (sustained 1X)
Burst	2100 to 4800 KB/s
Access times (typical)	
Full stroke	< 350 ms
Random	< 150 ms
Disc diameter	12 cm, 8 cm (4.7 inch, 3.15 inch)
Disc thickness	1.2 mm (0.047 inch)
Track pitch	1.6 μ m
Cache/buffer	128 KB
Startup time	< 7s
Stop time	< 4s (single), < 30s (multi-session)
Laser parameters	
Type	Semiconductor laser
Wavelength	700 $\pm$ 25nm
Divergence angle	53.5° $\pm$ 1.5°
Output power	0.13 mW
Temperature	5°C to 45°C (41°F to 113°F)
Humidity	5% to 90%

Wide Ultra3 SCSI Hard Drives

Table 6-5: Wide Ultra3 SCSI Hard Drive Specifications

Item	9-GB Drive	18-GB Drive	36-GB Drive	72-GB Drive
Capacity	9,100,0 MB	18,209.8 MB	36,419.6 MB	72,839.2 MB
Height	One-third, 1.0 in	One-third, 1.0 in	One-third, 1.0 in	One-third, 1.0 in
Size	3.5 in	3.5 in	3.5 in	3.5 in
Interface	Wide Ultra3	Wide Ultra3	Wide Ultra3	Wide Ultra3
Transfer Rate	160 MB/sec	160 MB/sec	160 MB/sec	160 MB/sec
Rotational Speed	10,000 RPM	10,000 RPM	10,000 RPM	10,000 RPM
Bytes per sector	512	512	512	512
Logical Blocks	17,773,524	35,566,080	71,132,000	142,264,000
Operating Temperature	10°C to 35°C (50°F to 95°F)	10°C to 35°C (50°F to 95°F)	10°C to 35°C (50°F to 95°F)	10°C to 35°C (50°F to 95°F)

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